

AUTOMATIC FILTERS SERIES: FC/D FAC/D

INSTRUCTIONS MANUAL

WARNING!

The equipment must be used only for the utilization for which they have been designed, as shown in the technical documentation.

Read carefully this leaflet until the end before starting any operation.

Proceed strictly according to all directions included in this manual.

Automatic filters series FC/D and FAC/D are designed to treat raw water supplied from municipalities or from well.

ANY OTHER APPLICATIONS OF THE EQUIPMENT DIFFERENT THAN THE MENTIONED ONES IS MADE UNDER THE ONLY RESPONSIBILITY OF THE USER.

For any assistance concerning the installations, maintenance or utilization of the equipment apply the NOBEL Service Center closest to you or directly:

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DRAWING 3: components models FC15/D÷FC80/D, FAC15/D÷FAC60/D

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DRAWING 5: installation models FC15/D÷FC80/D, FAC15/D÷FAC60/D

Special instructions membrane valves

Special instructions electronic programmer

1. Safety

1.1. General

The equipment has been designed and constructed according to D.P.R. n° 459 of 24th July 1996 (regulation for accomplishment of Norms 89/392/CEE, 91/368/CEE, 93/44/CEE and 93/68/CEE regarding the unification of States members laws in so far as machines are concerned).

It has been designed and constructed according to European Norms UNI EN 292-1, UNI EN 292-2, UNI EN 292-2/A1, UNI EN 983, CEI EN 60439-1, CEI EN 60 204-1.

Only authorized and skilled personnel will be allowed to carry out installation, start up as well as routine and planned maintenance.

1.2. How to displace the unit

Particular care and attention should be put in during moving and displacing of heavy items, in order to avoid injuries to persons or damage properties. The heavy parts must be lifted and displaced always hooking and lifting them by the points shown on the drawings (see fig. 1) and using only suitable ropes, hooks and/or chains, according to the weight (see weight table § 3.5 page 6).

1.3. Hydraulics

All operations must be performed by and/or under direct supervision of skilled and authorized operators, using proper tools and personal protection devices if required (CE marked).

Before any operation of taking out pipes or part of hydraulic system, it is required to release the pressure inside and empty the part of the system.

1.4. Electrical

Before starting any operation on electrical devices, be sure that main power supply is OFF. All operations must be performed by skilled and authorized operators.

In case of liquid leakage, switch off the main power supply before operate. Before the switching ON, be sure all the parts of the system are perfectly dry. Check that the available electrical power is correct, (see § 3.2 page 5) before connection. Do not make preliminary wiring connections.

1.5. How to store and delivery

	t = °C	t = °F	humidity rel.	notes
• closed rooms	5÷45	41÷113	5÷95% without condensate	
• open space	5÷45	41÷113	5÷95% without condensate	protect from sun-light and rain.
• transport	5÷45	41÷113	5÷95% without condensate	protect from sun-light and rain.

2. Principles of working

FC/D and **FAC/D** series filters are used for water treatment for residential and industrial applications as well. All the materials are food grade and approved for drinking water.

2.1. Quartz-sand filters FC/D

The filtration through a sand media is a mechanical process that allows to remove suspended solids (even of small dimensions) from water.

The slower is the linear flow (speed of water trough the filtering bed), the better is the filtration action.

During the process, as the filtering bed traps the suspended particles, as filtration action increases, since the trapped solids works the same way of a filtering bed!

But it also increases the resistance of the filtering bed against the water flow; so the pressure drop between inlet and outlet increases as well.

The maximum allowed pressure drop is 1 bar (100 kPa), after that it is required to backwash the filtering bed.

The purpose of the backwashing is to re-build the filtering bed efficiency, by removing the solids trapped during service; it is featured by a counter-flow of water through the filtering bed.

The working of the system is controlled by an automatic programmer, allowing to schedule the day and the hour of the regeneration (backwashing).

For the best working of the filter, the backwashing should be featured before the pressure drop reaches the threshold level (1 bar - 100 kPa). According to that, it is suggested to schedule the regeneration according to a pressure drop of 0.6÷0.7 bar (60÷70 kPa).

During regeneration the water supplying is completely inhibited by means of a membrane valve mounted on the outlet line.

2.2. Activated-carbon filters FAC/D

Filtration through a bed of activated carbon is the process that allows to remove organic matters and chlorine from water.

The lower is the flow rate, the better is the filtration action.

FAC/D series filters are designed and sized for chlorine removal. The expected life of activated-carbon used as de-chlorination (chlorine removal) is very long; it works as chemical reduction of chlorine to chloride ion.

Activated carbon action is not selective in removing the substances contained in water and crossing the filtering bed: hence, it removes also the organics the water contains, if any.

Therefore, it could happen that the filtering bed is exhausted or clogged by the trapping of substances contained in water, even if the purpose of treatment was not the removal of these substances, but just the de-chlorination.

Furthermore, it could happen that the filtering bed releases some of the substances previously trapped in higher concentration than before.

Since it is quite impossible to forecast the exhaustion of the activated carbon bed, or to monitor the exhaustion itself, with current instrumentation, the utilization of an activated carbon filter must be strictly avoided without adequate pre-treatments, like quartz-sand filtration, chlorination, etc.

Whether raw water contains organics and/or is biologically polluted, *FAC/D* series filters **CANNOT** be used without written authorization by NOBEL Technical Department.

The activated-carbon bed also works as a mechanic filter same way of quartz-sand bed.

Although this working should be avoided, it can happen that the pressure drop of activated-carbon bed reaches a value of 1 bar (100 kPa); in this case the backwashing of the filtering bed is required.

The equipment allows to schedule the days (how often) and time of day for the regeneration, same way of quartz-sand filters, as above explained.

It is recommended to run the regeneration only when it is strictly required: the backwashing causes the mixing of the bed and could displace the higher layers of activated carbon (most polluted) from the top to the bottom of the column.

During regeneration the water supplying is completely inhibited by means of a membrane valve mounted on the outlet line.

3. Technical characteristics

3.1. Assumed raw water characteristics

• water temperature (min÷max)	°C (°F)	5÷40 (41÷104)
• water pressure (min÷max)	bar (kPa)	1.5÷8.0 (150÷800)

3.2. Technical characteristics (general)

• power supply	V ph/Hz W	230 1/50 50
• regeneration time	min.	20÷30
• Δp min/max	bar (kPa)	0.2÷1.0 (20÷100)

3.3. Characteristics for each model

MODEL	connections		flow m ³ /h			backwashing water consumption
	IN/OUT	drain	operating	max	backwash	liters
FC05/D	1¼"	1"	3.2	6.5	4.8	1600
FC08/D	1½"	1¼"	4.0	8.0	6.0	2000
FC11/D	1½"	1¼"	5.7	11.0	8.5	2850
FC15/D	2"	1½"	7.8	15.0	11.0	3900
FC20/D	2"	1½"	10.0	20.0	15.0	5000
FC25/D	2½"	2"	13.0	26.0	20.0	6500
FC30/D	DN80	2½"	16.0	32.0	24.0	8000
FC40/D	DN80	2½"	20.0	40.0	30.0	10000
FC45/D	DN80	2½"	23.0	46.0	35.0	11500
FC50/D	DN100	DN80	27.0	53.0	40.0	13500
FC60/D	DN100	DN80	31.0	62.0	46.0	15500
FC70/D	DN100	DN80	35.0	70.0	53.0	17500
FC80/D	DN100	DN80	40.0	80.0	60.0	20000

MODEL	connections		flow m ³ /h		backwashing water consumption
	IN/OUT	drain	max	backwash	liters
FAC05/D	1¼"	1"	5.0	5.0	500
FAC08/D	1½"	1¼"	8.0	8.0	800
FAC11/D	1½"	1¼"	11.0	11.0	1100
FAC15/D	2"	1½"	15.0	15.0	1500
FAC20/D	2½"	2"	20.0	20.0	2000
FAC25/D	2½"	2"	24.0	24.0	2400
FAC30/D	DN80	2½"	30.0	30.0	3000
FAC40/D	DN80	2½"	40.0	40.0	4000
FAC50/D	DN100	DN80	48.0	48.0	4800
FAC60/D	DN100	DN80	61.0	61.0	6100

3.4. Dimensions

See DRAWING 1 *dimensions*

3.5. Weight

MODEL	WEIGHT						
	vessel	quartz-sand kg			anthracite	shipping	on service
	kg	04÷07 mm	1÷2 mm	2÷3 mm	l (kg)	approx. kg	approx. kg
FC05/D	140	100	50	35	40(40)	400	600
FC08/D	155	120	60	50	50(50)	470	700
FC11/D	185	200	80	50	70(70)	620	960
FC15/D	300	250	100	100	100(100)	900	1400
FC20/D	340	300	150	100	130(130)	1100	1700
FC25/D	390	400	200	150	150(150)	1350	2100
FC30/D	435	500	200	200	200(200)	1650	2600
FC40/D	550	600	300	200	250(250)	2000	3200
FC45/D	610	700	350	250	300(300)	2350	3700
FC50/D	670	800	400	300	350(350)	2750	4500
FC60/D	740	900	450	350	400(400)	3100	5000
FC70/D	870	1100	500	400	450(450)	3500	5600
FC80/D	1100	1250	600	450	500(500)	4000	6400

MODEL	WEIGHT				
	vessel	quartz-sand 1-2 mm	activated carbon	shipping	on service
	kg	kg	l (kg)	approx. kg	approx. kg
FAC05/D	155	30	200(96)	320	550
FAC08/D	185	50	280(134)	410	750
FAC11/D	300	50	350(168)	560	1100
FAC15/D	340	75	500(240)	710	1300
FAC20/D	390	100	650(312)	900	1700
FAC25/D	435	100	800(463)	1000	1900
FAC30/D	550	150	1000(480)	1300	2400
FAC40/D	670	200	1350(648)	1650	3200
FAC50/D	740	250	1600(768)	2000	3800
FAC60/D	1100	300	2000(960)	2600	5000

4. Installation

4.1. Room conditions

Room & climate conditions.

- room temperature 5÷45°C (41÷113°F)
- humidity rel. 5÷95 % without condensate
- sun-light protection required
- rain, snow etc. protection required

4.2. How to remove packaging

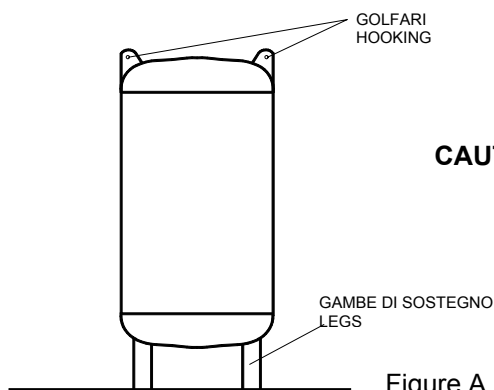
The vessels are shipped wrapped in a plastic foil; remove it with care before starting-up. Keep the cards and everything contained inside the packaging.

The media filter are shipped as separated:

- in bags of 25 kg (35 liters) each or fraction anthracite
- in bags of 50 kg each or fraction quartz sand
- in bags of 25 kg (50 liters approx.) each or fraction activated carbon

4.3. How to move and lift the unit

The vessels can be displaced when they are empty, hooking and lifting by the special rings mounted on the upper part of the vessels (see fig. 1). It is recommended to use proper sized hooks and ropes, according to the weight. It is also possible to hook and lift the vessel by the bearing legs.



CAUTION : DO NOT LIFT OR MOVE THE UNIT HOOKING OR CATCHING BY THE PRE-ASSEMBLED PARTS.

Figure A

4.4. Placing & commissioning

Place the unit according to the available room of the site and the required room for current maintenance and service of the equipment. See the dimensional drawing.

- Place the column on a perfectly flat surface. The position shown on the installation drawing is only suggested; the column can be placed in different positions, according to the inlet/outlet connections on the valve group.
- Load the supplied quartz-sand (2-3 mm size for FC/D filters, 1-2 mm size for FAC/D filters) into the vessel, through the lower man-hole, until the sand covers completely the filter-nozzles. Make a flat surface of the sand using a wooden tool, in order to avoid any damage to the coating of the vessel. Close the man-hole tightening the nuts.
- Load the rest of supplied media filter into the vessel, through the upper man-hole (or through the upper head, see *components drawing*). The media filter are shipped separately; check that the shipped and available quantity complies exactly with the quantity listed in the Weight Table (§ 3.5 page 6).

Filtering media must be loaded, one after the other one, and according to the following order:

- ◊ quartz sand 2÷3 mm (only for filters FC)
- ◊ quartz sand 1÷2 mm
- ◊ quartz sand 0.4÷0.7 mm (only for filters FC)
- ◊ anthracite (only for filters FC)
- ◊ activated carbon (only for filters FAC)
- After completed the loading, close the upper man-hole (or upper head)
- Fix the group with membrane valves to the column (if separately shipped, see installation drawing)

4.5. Hydraulic connections

In order to avoid shut-off during maintenance operations, an emergency by-pass line should be provided

- Complete the line from inlet fittings to the raw water line.
- Complete the line from outlet fittings (valve V2) to the treated water line.
- Connect the drain valves (V1 and V5) to a floor drain. The gate valve mounted downstream of the valve V5 will be used to adjust the backwash flow rate.

A common flexible pipe made in plastic or rubber can be used for the drain line; its diameter must be of at least one size larger of the one mentioned on "CHARACTERISTICS FOR EACH MODEL" table.

It is suggested the drain line could be inspected in order to check quantity and quality of drain water, as well as any leakage of media filter from the unit.

- Connect the inlet air fitting, placed on the base manifold of the solenoyd valves, to a compressed air-mains, complete with pressure reducer, dehumidifier filter and shut-off valve. The air pressure must be kept at value equal or higher of the pressure of water to be treated, with max value of 8.0 bar.

Whether water is used to pilot the valves, the inlet fitting of the base manifold of the solenoyd valves must be connected to the pilot water fitting (1/4"), pre-arranged on the inlet manifold of the column; run to the drain a pipe from the drain fitting (1/4") of the base manifold of the solenoyd valves.

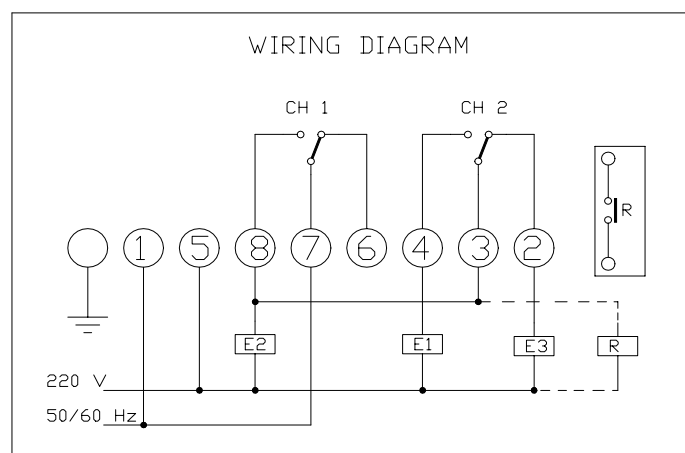
- Complete the line between the outlet fitting of each solenoyd valve to the correspondent membrane valve:

SOLENOYD VALVE		MEMBRANE VALVES	
EV no.	TYPE	no.	TYPE
1	NC	V1	NC
2	NC	V2	NA
3	NC	V3-V4-V5	NC-NA-NC

All the solenoyd valves can be hand-driven by the lever placed at the base of each of them; the turning of the lever simulate the action of the coil. Then, for valves NC type, the valve is closed when the lever is on parallel to the base; it is opened when the lever is on perpendicular to the base itself.

4.6. Electrical wiring connections

- Connect the power cable of the programmer to a power socket check that the available power is correct as listed in technical characteristics (see § 3.2 page 5).
- The relais R, available upon request, allows to have a free voltage contact for remote segnalation of running regeneration; the wiring connection must be done directly on the clamps of NO contact on the relais itself.



5. End cycle and regeneration

5.1. End cycle

The adjustment of the end cycle depends on the quantity of suspended solids the water contains.

Take note of the parameters to be taken in consideration, as below listed, since a correct adjustment can be made only checking the real operating conditions.

The end of a cycle is reached when the pressure drop across the filter is approx. 0.8÷1.0 bar (80÷100 kPa). After checked after how long time the max allowable pressure drop is reached, it is possible to adjust the time schedule of the regeneration definitely.

The filters are equipped with an electronic time programmer that allows to schedule the automatic regeneration: it starts at selected time and day (24 h, 7 days).

5.2. Regeneration

The regeneration is automatically controlled; it can also be started manually, at any time.

The manual start of a regeneration can be made by a proper sequence of pushing the buttons 1 and 2 placed on the programmer, in order to act the relays of the channels 1 and 2. During the operation, the power must be ON.

When the regeneration, manually started, is completed, the unit will go on to work according to the pre-set schedule.

The regeneration can also run in case of power failure, by hand-driving the lever of the pilot solenoid valves: the solenoid valve is closed when the lever is on parallel to the base and it is open when it is on perpendicular to the base itself. Naturally, the compressed air supplying (air controlled valves) or pilot water supplying (water controlled valves) must be assured.

The correspondent membrane valves (controlled by the pilot solenoid ones), if NC type is open when the solenoid valve is open, and viceversa if the membrane valve is NO type.

PHASE	SOLENOID VALVES EXCITED (=OPEN)	OPEN VALVES
SERVICE	//	V2 - V4
BACKWASHING	E2 - E3	V3 - V5
RINSE	E1 - E2	V1 - V4

The regeneration phases run one after another, as follows :

1. **Backwash** : during this phase, the water flushes from the bottom to the top of the column, lifting the filtering media and releasing the solids trapped on its surface during the service. The backwashing water flows to drain from the top of the column. This is the only phase, during which the water crosses through the column from the bottom to the top.
2. **Rinse** : it is the phase during which the filtering media are rinsed; at the end of this phase the column is ready to start again a new service cycle.

NOTE: During regeneration the water supplying is completely inhibited by means of a membrane valve mounted on the outlet line.

5.3. How to set the time of regeneration

The electronic programmer keep in memory the program by mean of an EEPROM; the time of the day is memorized even in case of power failure (internal not-rechargeable buffer battery, charge life max 5 years without power).

The setting or modification of the factory set values, shown on table below, is very easy. Just take note that the start of backwashing phase is controlled by the exciting of channel 1, the starting of the rinse phase by the exciting of channel 2, the end of rinse phase (therefore the end of regeneration) by the elapsed time pre-set for channel 1.

For any informations concerning how to operate and modify, see attached special instructions of the programmer.

FACTORY SET FOR FC FILTERS (regeneration once a day)

	start of backwash	end of backwash start of rinse	end of rinse	at rest position of CH2
channel 1	ON 23.00		OFF 23.25	
channel 2		ON 23.20		OFF 23.30

FACTORY SET FOR FAC FILTERS (regeneration once a week)

	start of backwash	end of backwash start of rinse	end of rinse	at rest position of CH2
channel 1	ON 23.00		OFF 23.15	
channel 2		ON 23.10		OFF 23.30

6. Starting-up

The starting-up of the unit consists of running a first regeneration cycle, during which the filtering media column will be filled of water, all automatic features will be checked and the unit will be prepared to start the service.

At the beginning, it is suggested to operate manually, hand-driven the valves, as above explained at the § "Regeneration". This way will allow to stop, to run for longer time or to repeat each phase as desired.

To start-up the unit, proceed as follows :

- DISCONNECT ELECTRIC POWER
- Open the by-pass and inlet valves, keeping the outlet one shut.
- close the gate valve along the backwash drain line
- hand-drive the solenoyd valves E3 to open the backwashing membrane valves
- open slowly and gradually the gate valve on backwash drain line. The water will enter inside the vessel from the bottom and, during filling, will expel the air inside it.
- when only water will come out from the drain, adjust the drain valve in order that the flow rate will be the highest allowable without any leakage of media filter through the drain line; when the proper flow rate of backwash has been stated, adjust the gate valve definitely. The backwashing phase must run until all the water coming out the drain is perfectly clear.
- Hand-drive the solenoyd valves E3 to close the backwashing membrane valves.
- Hand-drive the solenoyd valve E1 to open the membrane valve V1 (RINSE); the rinse phase must run until all the water coming out the drain is perfectly clear.
- Hand-drive the solenoyd valves E1 to close the valve V1 and to conclude the regeneration.
- Switch ON the control panel.
- Open the outlet valve and close the by-pass valve.

Starting now the unit is on service and feeds treated water.

7. Service & maintenance

Automatic filters are equipment designed to treat raw water supplied from municipalities or from well.

ANY OTHER APPLICATIONS OF THE EQUIPMENT DIFFERENT THAN THE MENTIONED ONES IS MADE UNDER THE ONLY RESPONSIBILITY OF THE USER.

The correct handling of the equipment requires :

- check that the air and/or water pressure are within the stated values.

Not any further special maintenance operations are required.
There is not any consumption material to be currently replaced.

The average life of the filter-bed is approx. 5÷8 years, according to the quality of raw water and how often regeneration is featured.

7.1. Disposal

In case of disposal of the unit or parts of it, it must be made according to local laws concerning the waste of the materials.

Concerning media filter, they are natural products that, at origin state, can be disposed of as natural products. Whether the activated carbon had trapped special and particular substances, the carbon will be classified as same class of the trapped substances.

To dispose of them it should be required to identify the class of this waste, by a detailed analysis.

8. Main components

Quantity	DESCRIPTION
1	vessel in coated carbon steel (see table DIMENSIONS)
1	internal water distribution system (see following table)
#	filtering media (see table WEIGHT)
5	membrane valves made in cast-iron (see following table)
3	pilot solenoid valves TYPE _____
1	electronic programmer type VEMER LOGIK DW2
#	galvanized steel fittings several size

MODEL	membrane valves					distribution system number/type
	V1	V2	V3	V4	V5	
FC05/D	1"NC	1¼"NA	1"NC	1¼"NA	1"NC	12 short
FC08/D	1"NC	1½"NA	1¼"NC	1½"NA	1¼"NC	12 short
FC11/D	1"NC	1½"NA	1¼"NC	1½"NA	1¼"NC	18 short
FC15/D	1"NC	2"NA	1½"NC	2"NA	1½"NC	30 plate
FC20/D	1"NC	2"NA	1½"NC	2"NA	1½"NC	36 plate
FC25/D	1"NC	2½"NA	2"NC	2½"NA	2"NC	42 plate
FC30/D	1¼"NC	DN80NA	2½"NC	DN80NA	2½"NC	56 plate
FC40/D	1¼"NC	DN80NA	2½"NC	DN80NA	2½"NC	68 plate
FC45/D	1¼"NC	DN80NA	2½"NC	DN80NA	2½"NC	84 plate
FC50/D	1½"NC	DN100NA	DN80NC	DN100NA	DN80NC	87 plate
FC60/D	1½"NC	DN100NA	DN80NC	DN100NA	DN80NC	104 plate
FC70/D	1½"NC	DN100NA	DN80NC	DN100NA	DN80NC	118 plate
FC80/D	1½"NC	DN100NA	DN80NC	DN100NA	DN80NC	142 plate

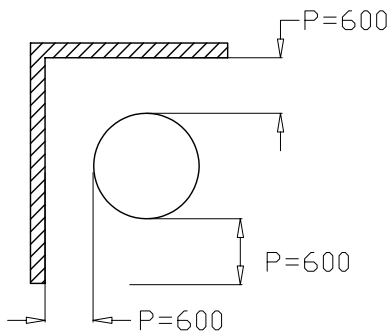
MODEL	membrane valves					distribution system number/type
	V1	V2	V3	V4	V5	
FAC05/D	1"NC	1¼"NA	1"NC	1¼"NA	1"NC	12 short
FAC08/D	1"NC	1½"NA	1¼"NC	1½"NA	1¼"NC	18 short
FAC11/D	1"NC	1½"NA	1¼"NC	1½"NA	1¼"NC	30 plate
FAC15/D	1"NC	2"NA	1½"NC	2"NA	1½"NC	36 plate
FAC20/D	1"NC	2½"NA	2"NC	2½"NA	2"NC	42 plate
FAC25/D	1"NC	2½"NA	2"NC	2½"NA	2"NC	56 plate
FAC30/D	1¼"NC	DN80NA	2½"NC	DN80NA	2½"NC	68 plate
FAC40/D	1¼"NC	DN80NA	2½"NC	DN80NA	2½"NC	87 plate
FAC50/D	1½"NC	DN100NA	DN80NC	DN100NA	DN80NC	104 plate
FAC60/D	1½"NC	DN100NA	DN80NC	DN100NA	DN80NC	142 plate

9. Trouble shooting guide

PROBLEM	CAUSE	HOW TO SOLVE
The electronic programmer does not switch ON.	- electrical power is disconnected - the programmer is defected	- connect electrical power - replace the programmer
The regeneration does not run	- electrical power is disconnected - the programmer is not correctly adjusted - the programmer is defected	- connect electrical power - adjust correctly the programmer - replace the programmer
Regeneration is electrically started but it does not run hydraulically	- there is not supplying of pilot fluid (air or water) - one or more solenoyd valves are defected	- connect properly the supplying of pilot water or compressed air - replace the defected solenoyd valves
There is a leakage of water to drain during service	one or both membrane valves no. 1 and 5 do not close properly.	- check the proper working of the pilot solenoyd valves - check and clean the seat of the plate of the membrane valve
The unit does not feed water	the membrane valve no. 2 does not open	check the proper working of the pilot solenoyd valve
There is a leakage of filtering media to the drain or to the outlet line	one nozzle of distribution system is damaged or broken	replace the nozzle

FILTRI SERIE FILTERS SERIES FC/D-FAC/D

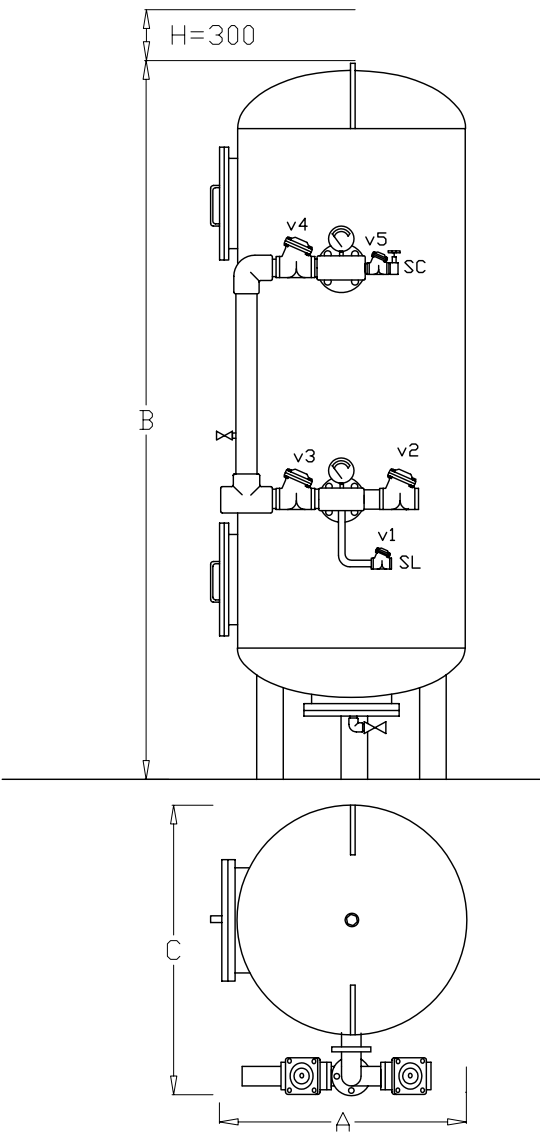
mod. FC05/D÷FC80/D
FAC05/D÷FAC60/D



L-P-H SPAZIO MINIMO PER GESTIONE E MANUTENZIONE
MINIMUM REQUIRED ROOM FOR MAINTENANCE

DIMENSIONI / DIMENSIONS (mm)			
MOD.	A	B	C
FC05	800	2100	800
FC08-FAC05	850	2100	900
FC11-FAC08	900	2100	1000
FC15-FAC11	950	2150	1000
FC20-FAC15	1000	2150	1000
FC25-FAC20	1100	2150	1100
FC30-FAC25	1250	2250	1250

DIMENSIONI / DIMENSIONS (mm)			
MOD.	A	B	C
FC40-FAC30	1350	2350	1350
FC45	1450	2350	1450
FC50-FAC40	1550	2350	1550
FC60-FAC50	1650	2350	1650
FC70	1750	2350	1750
FC80-FAC60	1850	2450	1850



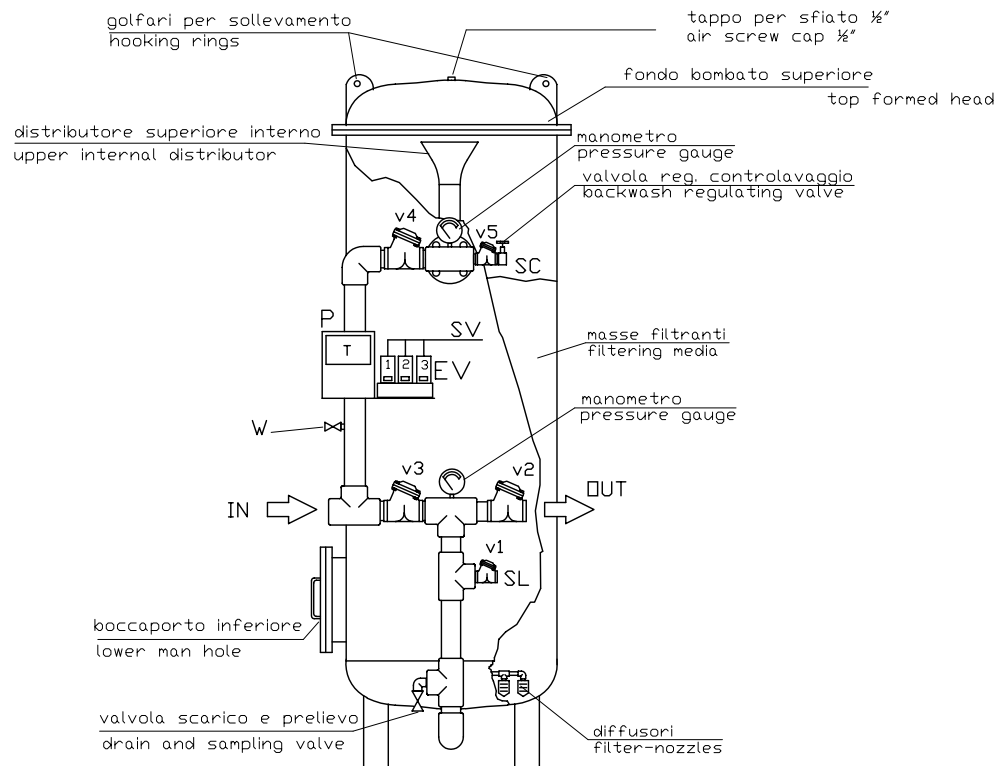
FILTRI SERIE FILTERS SERIES

FC/D

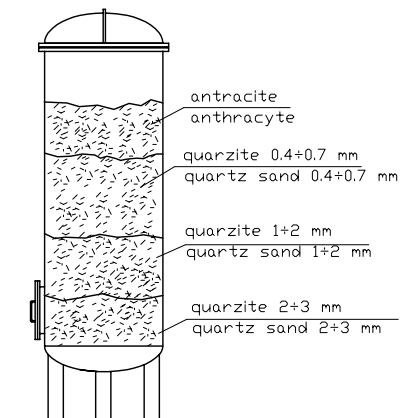
mod. FC05/D
FC08/D
FC11/D

FAC/D

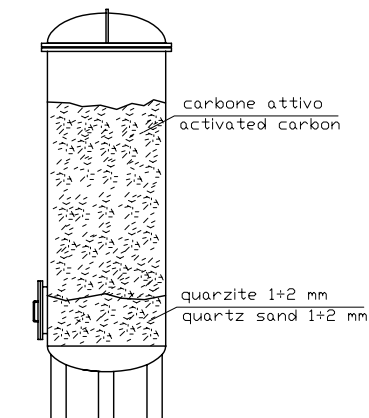
mod. FAC05/D
FAC08/D
FAC11/D



Letto filtrante FC/D
FC/D filtering bed



Letto filtrante FAC/D
FAC/D filtering bed



IN INGRESSO/INLET
OUT USCITA/OUTLET
W PRESA ACQUA PILOTAGGIO
FITTING FOR PILOT WATER
SL SCARICO LAVAGGIO
RINSE DRAIN
SC SCARICO CONTROLAVAGGIO
BACKWASH DRAIN

EV ELETTROVALVOLE
SOLENOID VALVES
SV SCARICO ELETTROVALVOLE
SOLENOID VALVES DRAIN
P QUADRO COMANDO
CONTROL PANEL
T PROGRAMMATORE/PROGRAMMER



VALVOLE A DIAFRAMMA
DIAPHRAGM VALVES

VALVOLE A DIAFRAMMA/DIAPHRAGM VALVES						IN/OUT
MOD	v1	v2	v3	v4	v5	Ø
FC-FAC 05/D	1" NC	1 1/4" NA	1" NC	1 1/4" NA	1" NC	1 1/4"
FC-FAC 08/D	1" NC	1 1/2" NA	1 1/4" NC	1 1/2" NA	1 1/4" NC	1 1/2"
FC-FAC 11/D	1" NC	1 1/2" NA	1 1/4" NC	1 1/2" NA	1 1/4" NC	1 1/2"

NC NORMALMENTE CHIUSA/NORMALLY CLOSE

NA NORMALMENTE APERTA/NORMALLY OPEN

rev. 1

NOBEL srl

MILANO

COMPONENTI/COMPONENTS

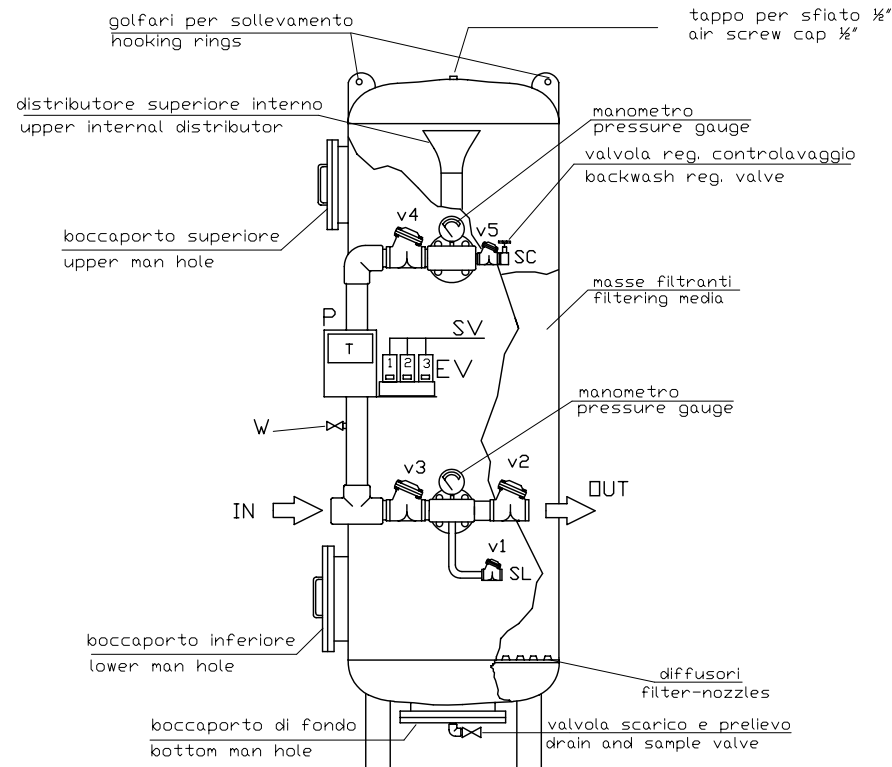
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date 05/1998

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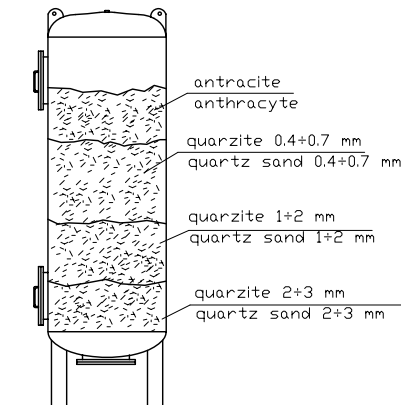
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of 5

FILTRI SERIE FILTERS SERIES

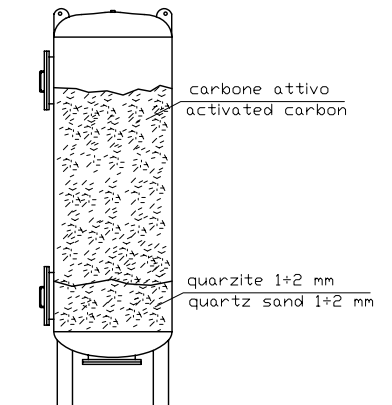
FC/D mod. FC15/D÷FC80/D
FAC/D mod. FAC15/D÷FAC60/D



Letto filtrante FC/D
FC/D filtering bed



Letto filtrante FAC/D
FAC/D filtering bed



IN INGRESSO / INLET
OUT USCITA / OUTLET
W PRESA ACQUA PILOTAGGIO
FITTING FOR PILOT WATER
SL SCARICO LAVAGGIO
RINSE DRAIN
SC SCARICO CONTROLAVAGGIO
BACKWASH DRAIN
EV ELETTROVALVOLE
SOLENOID VALVES
SV SCARICO ELETTROVALVOLE
SOLENOID VALVES DRAIN
P QUADRO COMANDO
CONTROL PANEL
T PROGRAMMATORE / PROGRAMMER
VALVOLE A DIAFRAMMA
DIAPHRAGM VALVES

VALVOLE A DIAFRAMMA/DIAPHRAGM VALVES						IN/OUT
MOD	v1	v2	v3	v4	v5	Ø
FC-FAC 15/D	1" NC	2" NA	1½" NC	2" NA	1½" NC	2"
FC20/D	1" NC	2" NA	1½" NC	2" NA	1½" NC	2"
FAC 20/D	1" NC	2½" NA	2" NC	2½" NA	2" NC	2½"
FC-FAC 25/D	1" NC	2½" NA	2" NC	2½" NA	2" NC	2½"
FC-FAC 30/D	1½" NC	DN80NA	2½" NC	DN80NA	2½" NC	DN80
FC-FAC40/D	1½" NC	DN80NA	2½" NC	DN80NA	2½" NC	DN80

VALVOLE A DIAFRAMMA/DIAPHRAGM VALVES						IN/OUT
MOD	v1	v2	v3	v4	v5	Ø
FC45/D	1¼" NC	DN80NA	2½" NC	DN80NA	2½" NC	DN80
FC-FAC 50/D	1½" NC	DN100NA	DN80NC	DN100NA	DN80NC	DN100
FC-FAC 60/D	1½" NC	DN100NA	DN80NC	DN100NA	DN80NC	DN100
FC70/D	1½" NC	DN100NA	DN80NC	DN100NA	DN80NC	DN100
FC80/D	1½" NC	DN100NA	DN80NC	DN100NA	DN80NC	DN100

NA NORMALMENTE APERTA/NORMALLY OPEN NC NORMALMENTE CHIUSA/NORMALLY CLOSE

rev. 1

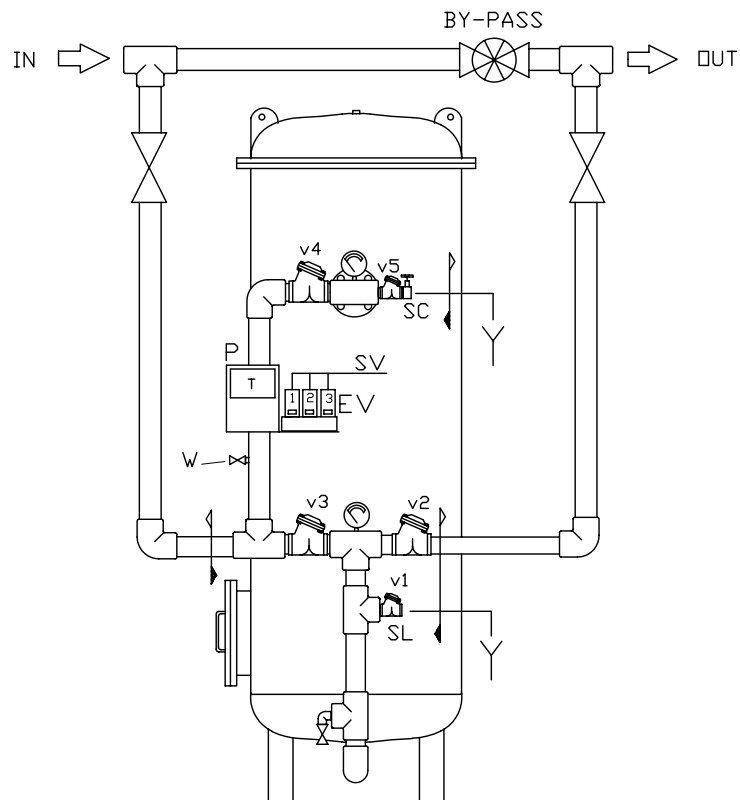
FILTRI SERIE FILTERS SERIES

FC/D

mod. FC05/D
FC08/D
FC11/D

FAC/D

mod. FAC05/D
FAC08/D
FAC11/D



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↑
LIMITE DELLA FORNITURA NOBEL
LIMITS OF NOBEL SUPPLY

- IN INGRESSO / INLET
OUT USCITA / OUTLET
W PRESA ACQUA PILOTAGGIO
FITTING FOR PILOT WATER
SL SCARICO LAVAGGIO
RINSE DRAIN
SC SCARICO CONTROLAVAGGIO
BACKWASH DRAIN
EV ELETTROVALVOLE
SOLENOID VALVES
SV SCARICO ELETTROVALVOLE
SOLENOID VALVES DRAIN
P QUADRO COMANDO
CONTROL PANEL
T PROGRAMMATORE / PROGRAMMER
Y ALLO SCARICO
TO DRAIN
 VALVOLE A DIAFRAMMA
DIAPHRAGM VALVES

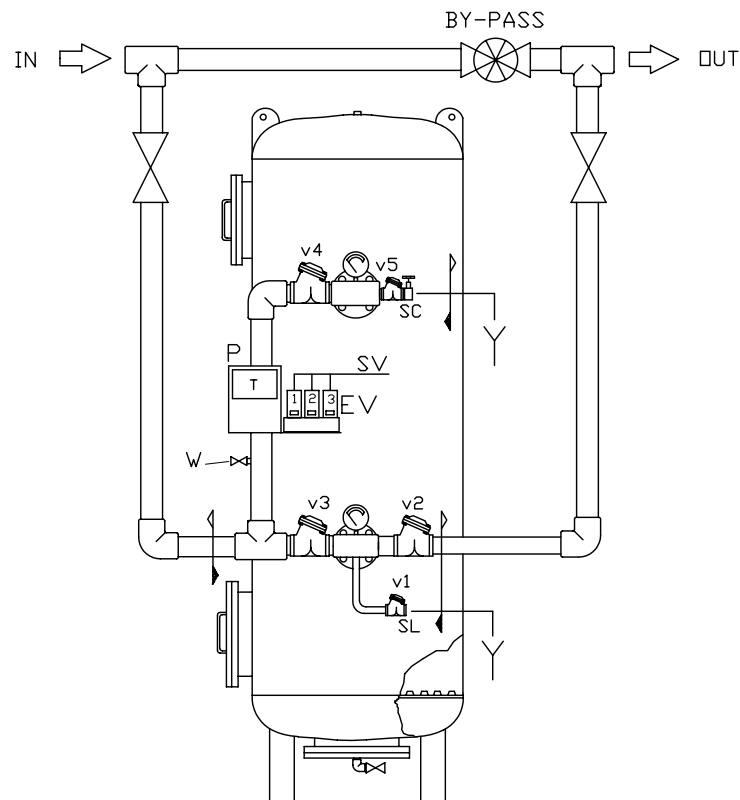
CORRISPONDENZA ELETTROVALVOLE SOLENOID VALVES CORRESPONDENCE			
EV elettrovalvole solenoid valves	1	2	3
VD valvole a diaframma diaphragm valves	V1	V2	V3-V4-V5

PER LA REGOLAZIONE DEL PROGRAMMATORE VEDERE LE ISTRUZIONI SPECIFICHE
FOR PROGRAMMER ADJUSTING SEE ITS OWN MANUAL

rev. 1

FILTRI SERIE FILTERS SERIES

FC/D mod. FC15/D÷FC80/D
FAC/D mod. FAC15/D÷FAC60/D



- IN INGRESSO / INLET
OUT USCITA / OUTLET
W PRESA ACQUA PILOTAGGIO
FITTING FOR PILOT WATER
SL SCARICO LAVAGGIO
RINSE DRAIN
SC SCARICO CONTROLAVAGGIO
BACKWASH DRAIN
EV ELETTROVALVOLE
SOLENOID VALVES
SV SCARICO ELETTROVALVOLE
SOLENOID VALVES DRAIN
P QUADRO COMANDO
CONTROL PANEL
T PROGRAMMATORE / PROGRAMMER
Y ALLO SCARICO
TO DRAIN
VALVOLE A DIAFRAMMA
DIAPHRAGM VALVES

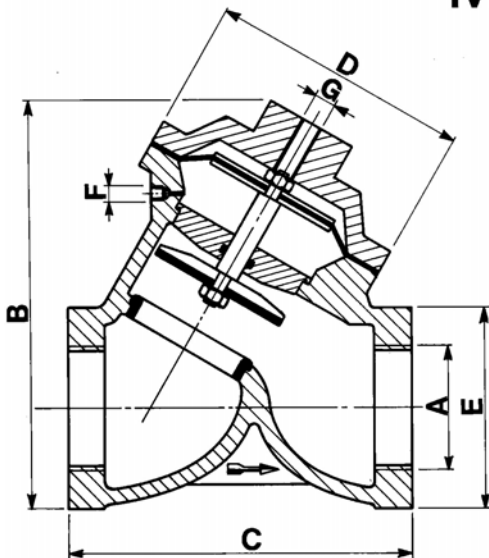
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LIMITE DELLA FORNITURA NOBEL
LIMITS OF NOBEL SUPPLY

CORRISPONDENZA ELETTROVALVOLE SOLENOID VALVES CORRESPONDENCE			
EV elettrovalvole solenoid valves	1	2	3
VD valvole a diaframma diaphragm valves	V1	V2	V3-V4-V5

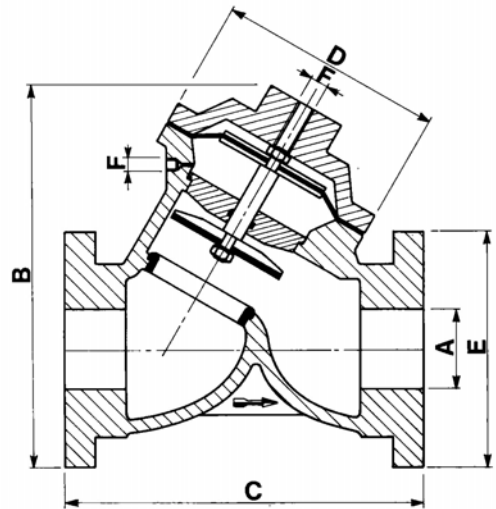
PER LA REGOLAZIONE DEL PROGRAMMATORE VEDERE LE ISTRUZIONI SPECIFICHE
FOR PROGRAMMER ADJUSTING SEE ITS OWN MANUAL

rev. 1

MATIC VALVE



Note: La pressione di pilotaggio è uguale, in valore, alla pressione di linea. Il pilotaggio della valvola è possibile con fluidi diversi da quelli di linea a condizione di rispettare la pressione minima di pilotaggio.



Note: The control pressure in the valve is the same as the Line pressure. The control of the valve is possible with a fluid different from the line fluids, but it is necessary to respect the minimum control pressure.

Press. min.: 0,5 bar
Press. max.: 15 bar
Temp. min.: 0° C
Temp. max.: + 75° C

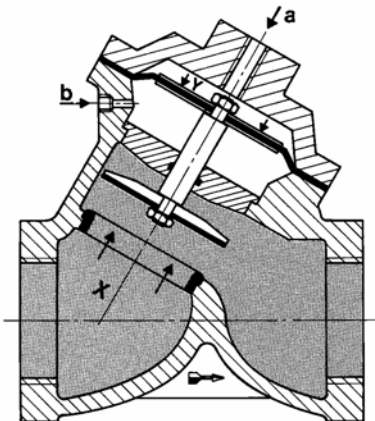
CODICI E DIMENSIONI D'INGOMBRO - CODES AND DIMENSIONS

TIPO	A**	B	C	D	E	F**	G	CORPO BASE*	PESO in Kg.
MV-A2A-01	3/4"	117	105	75	56	1/8"	1/4"	1"	1,8
MV-A2A-02	1"	117	105	75	56	1/8"	1/4"	1"	1,8
MV-A3A-01	1" 1/4	140	125	90	80	1/8"	1/4"	1" 1/2	3,5
MV-A3A-02	1" 1/2	140	125	90	80	1/8"	1/4"	1" 1/2	3,5
MV-A7A-01	2"	175	165	110	85	1/8"	1/4"	2"	8
MV-A4A-02	2" 1/2	210	196	135	106	1/8"	1/4"	2" 1/2	10
MV-A4A-03	3"	210	196	135	106	1/8"	1/4"	2" 1/2	10
MV-A5A-00 ***	DN 80	250	280	190	200	1/8"	1/4"	3"	17
MV-A6A-00 ***	DN 100	360	300	195	220	1/8"	1/4"	4"	27

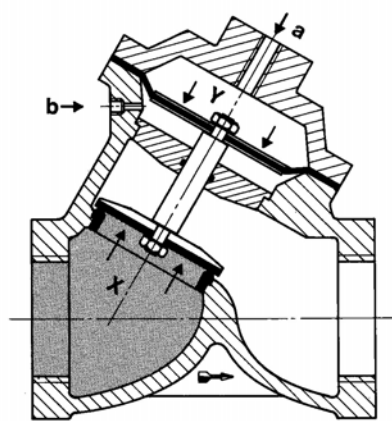
* Passaggio integrale ** BSP. *** FI. UNI 2277

VERSIONE NORMALMENTE APERTA N.O. FUNCTION

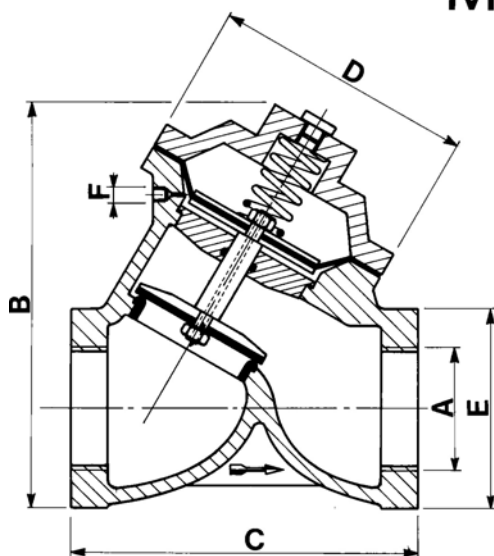
Valvola non pilotata (a senza pressione)
Valve not driven (a without pressure)



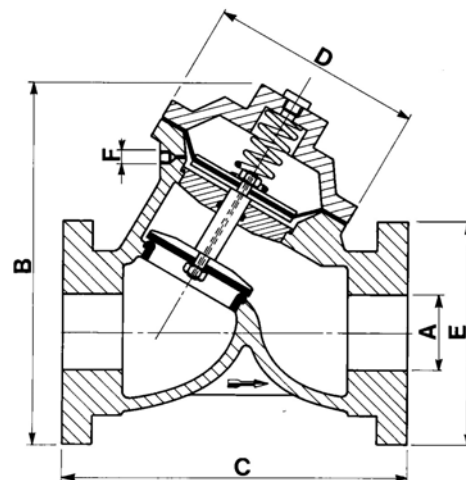
Valvola pilotata (a con pressione)
Valve driven (a with pressure)



MATIC VALVE



Note: La pressione di pilotaggio è uguale, in valore, alla pressione di linea. Il pilotaggio della valvola è possibile con fluidi diversi da quelli di linea a condizione di rispettare la pressione minima di pilotaggio.



Note: The control pressure in the valve is the same as the Line pressure. The control of the valve is possible with a fluid different from the line fluids, but it is necessary to respect the minimum control pressure.

Press. min.: 0,5 bar
Press. max.: 15 bar
Temp. min.: 0° C
Temp. max.: + 75° C

CODICI E DIMENSIONI D'INGOMBRO - CODES AND DIMENSIONS

TIPO	A**	B	C	D	E	F**	CORPO BASE*	PESO in Kg.
MV-A2C-01	3/4"	117	105	75	56	1/8"	1"	1,8
MV-A2C-02	1"	117	105	75	56	1/8"	1"	1,8
MV-A3C-01	1 1/4"	140	125	90	80	1/8"	1 1/2"	3,5
MV-A3C-02	1 1/2"	140	125	90	80	1/8"	1 1/2"	3,5
MV-A7C-01	2"	175	165	110	85	1/8"	2"	8
MV-A4C-02	2 1/2"	210	196	135	106	1/8"	2 1/2"	10
MV-A4C-03	3"	210	196	135	106	1/8"	2 1/2"	10
MV-A5C-00 ***	DN 80	290	280	190	200	1/8"	3"	17
MV-A6C-00 ***	DN 100	360	300	195	220	1/8"	4"	27

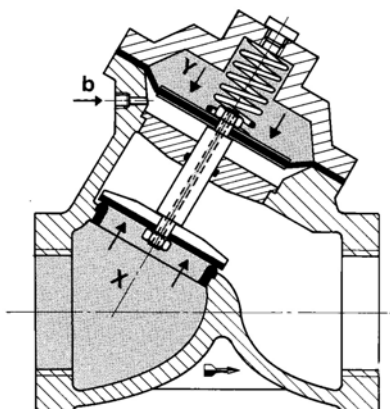
* Passaggio integrale

** BSP.

***FI. UNI 2277

VERSIONE NORMALMENTE CHIUSA N.C. FUNCTION

Valvola non pilotata (b senza pressione)
 Valve not driven (b without pressure)



Valvola pilotata (b con pressione)
 Valve driven (b with pressure)

